

What is Claimed is:

1. A method for preventing or delaying the development of clinical symptoms of insulin dependent diabetes wherein said method comprises administering to an animal an IGRP protein or a homologue or fragment thereof which, when administered to an animal, prevents or delays the development of at least one clinical symptom of insulin dependent diabetes.

2. The method, according to claim 1, wherein said IGRP protein, or fragment thereof, is a recombinant protein.

3. A composition comprising an isolated mammalian IGRP polypeptide fragment that specifically binds to islet-specific autoreactive T-lymphocytes, wherein said IGRP polypeptide fragment comprises a partial sequence of SEQ ID NO:2.

4. The composition of claim 3, which further comprising an isolated protein molecule selected from the group consisting of GAD₆₅, IA-2, IA-2 β , insulin and combinations thereof.

5. An isolated IGRP polypeptide or a homologue or fragment thereof that specifically binds to islet-specific autoreactive T-lymphocytes.

6. A method for detecting insulin dependent diabetes or susceptibility to developing insulin dependent (type 1) diabetes in a mammal comprising:

contacting a biological sample from the mammal with an IGRP polypeptide or fragment thereof and

detecting the presence of a response indicative of the presence of autoimmune (type 1) diabetes or the susceptibility to developing immune mediated (type 1) diabetes in said mammal.

7. The method of Claim 6, wherein biological sample is blood and the detecting step comprises measuring the levels of circulating autoantibodies to IGRP in the blood of the mammal.

8. The method of Claim 6, wherein the biological sample is serum and the detecting step comprises measuring the lymphocyte proliferative responses to IGRP and peptides derived from the IGRP protein.

9. The method of Claim 6, wherein the detecting step comprises detecting lymphocytes in the circulation and tissues that react with MHC class I and MHC class II molecules that are bound to IGRP peptides.

10. The method of Claim 6, wherein the detecting step comprises detecting lymphocytes in the circulation and tissues using ELISPOT assays that incorporate IGRP or derived peptides to stimulate reactive cells.

11. The method of claim 6 wherein the measuring step comprises a
5 radioimmunoassay, an ELISA assay, a depletion ELISA, or an immunoprecipitation method.

12. A method of screening for the presence of IGRP autoantibodies in a sample comprising

10 contacting the sample with a chimeric polypeptide comprising an epitope or epitopes of IGRP protein, wherein the chimeric polypeptide is a more specific diagnostic for insulin dependent diabetes mellitus than intact IGRP and produces fewer false positives than intact IGRP; and

15 detecting binding between an antibody in the sample and the chimeric polypeptide, the detection of binding indicating the presence of IGRP antibodies in the sample.

13. A method of preventing autoimmune (type 1) diabetes in a mammal comprising administering a prophylactically effective amount of a composition comprising a compound that elicits islet-specific autoreactive T-lymphocytes that selectively bind an epitope on IGRP.

20 14. The method of Claim 13, wherein the compound is IGRP or a peptide fragment thereof.

15. The method of Claim 13, wherein the compound is a mimeotope of IGRP or a peptide fragment thereof.

25 16. A method of treating type 1 diabetes comprising suppressing transcription of the IGRP gene.

17. A method of treating type 1 diabetes comprising suppressing the expression of the IGRP protein.